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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,274	02/27/2004	Hung C. Lin	MSI-6	5153

7590 05/18/2006

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EXAMINER	
LE, LANA N	

ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/787,274	LIN ET AL.	
	Examiner	Art Unit	
	Lana N. Le	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 2/27/04

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-7 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-7 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 4 is objected to because of the following informalities: "zero frequency" should be "zero IF frequency". Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vagher (US 5,507,036) in view of Nash (US 6,317,589) and further in view of Rotzoll (US 5,737,035).

Regarding claim 1, Vagher discloses an RF detector for a direct-conversion receiver (fig. 1) with an RF input signal comprising:

a RF input signal (received via 102) (col 2, lines 27-34);

a local oscillator (112) having an in-phase frequency local oscillator signal (in phase from 114) and a quadrature frequency local oscillator signal (quadrature signal from 114) (col 2, lines ;

a first mixer (108) to mix RF signal and the in phase signal from 114 to produce an in-phase beat frequency signal VIFI (output signal at output of 108, 116, 120) (col 2, lines 33-36);

a second mixer (110) to mix the FM RF signal and the VLOQ to a quadrature beat frequency signal VIFQ (output signal at output of 110, 118, 122) (col 2, lines 33-36); and

a demodulator (124) to mix the VIFI and VIFQ to serve as a detector and to output a demodulated signal (output signal of 124). Vagher does not disclose a frequency modulated (FM) input signal and the demodulator serving as an FM detector. Nash discloses a frequency modulated (FM) input signal (input at antenna 102; col 2, lines 59-65) and the demodulator serving as an FM detector (col 4, lines 2-5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the receiver of Vagher receive an RF signal in order to allow the receiver to be able of receiving any type of modulated RF signal, FM or AM, and for the demodulator to be able to demodulate the FM signal in a complex domain for detection of the FM signal as suggested by Nash.

Vagher and Nash do not disclose the demodulator is a mixer. However, it is well known in the art for a demodulator to be a mixer as taught by Rotzoll. Rotzoll discloses the demodulator comprises a mixer 350 (col 7, lines 24-31). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the demodulator be a mixer in order for the demodulator of Vagher to detect the audio

output using a conversion stage with phase shifting to the proper amount as suggested by Rotzoll.

Regarding claim 2, Vagher, Nash, and Rotzoll disclose the FM detector as described in claim 1, where Vagher discloses the detector further comprising a first low-pass filter (116) inserted between the first mixer (108) and the FM detector (124), and a second low-pass filter (118) inserted between the second mixer (110) and the detector (124) (col 2, lines 36-44).

Regarding claim 3, Vagher, Nash, and Rotzoll disclose the FM detector as described in claim 1, wherein Vagher discloses the in-phase beat frequency (baseband output of 108) and the quadrature beat frequency (baseband output of 110) are lower than the RF input signal frequency (fig. 1) (col 2, lines 33-40).

Regarding claim 4, Vagher, Nash, and Rotzoll disclose the FM detector as described in claim 3, wherein Vagher discloses the in-phase beat frequency and the quadrature beat frequency are of zero frequency (baseband frequency) (col 2, lines 33-40).

Regarding claim 5, Vagher, Nash, and Rotzoll disclose the FM detector as described in claim 1, wherein Rotzoll discloses the third mixer is a multiplier (350).

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vagher (US 5,507,036) in view of Nash (US 6,317,589) in view of Rotzoll (US 5,737,035) and further in view of Hatcher et al (US 6,535,725).

Regarding claim 6, Vagher, Nash, and Rotzoll disclose the FM detector as described in claim 5, wherein Vagher, Nash, and Rotzoll disclose the multiplier is a

Gilbert cell. Hatcher et al disclose a multiplier is a Gilbert cell (fig. 3; col 6, lines 35-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the multiplier be a Gilbert cell in order to output a suitable output signal which met design specifications for the transistors of the Gilbert cell as suggested by Hatcher et al.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vagher (US 5,507,036) in view of Nash (US 6,317,589) in view of Rotzoll (US 5,737,035) and further in view of Whikehart et al (US 6,173,003).

Regarding claim 7, Vagher and Nash disclose the FM detector as described in claim 5, wherein the multiplier is an Exclusive-OR gate. Vagher, Nash, and Rotzoll do not disclose the FM detector as described in claim 5, wherein the multiplier is an Exclusive-OR gate. Whikehart et al disclose a multiplier is an Exclusive-OR gate (fig. 4; col 4, lines 17-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the multiplier be an exclusive or gate in order to reverse in frequency the noise spectrum such that notches are formed in the spectrum at DC so that the resulting signal has low energy content at low frequencies as suggested by Whikehart et al.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lana N. Le whose telephone number is (571) 272-7891. The examiner can normally be reached on M-F 9:30-18:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lana Le

Lana N. Le
5-13-06
LANA LE
PRIMARY EXAMINER